

REMARKS

This Amendment responds to the Office Action dated May 7, 2003 in which the Examiner rejected claims 1-20 under 35 U.S.C. §102(a).

Applicants respectfully request the Examiner acknowledge the priority documents and Information Disclosure Statement filed September 17, 1999. A copy of the Claim for Priority and Information Disclosure Statement, along with a stamped postcard, are enclosed. It is respectfully requested that the Examiner acknowledges the Information Disclosure Statement and priority documents.

As indicated above, claim 8 has been amended to correct a typographical error and claims 1 and 8 have been amended for stylistic reasons. It is respectfully submitted that the amendments to claims 1 and 8 are unrelated to a statutory requirement for patentability and does not narrow the literal scope thereof.

Claim 1 claims a vehicle-mounted communication device comprising a transmitting/receiving means and a relay means. The transmitting/receiving means is provided for communication of information with a road-side communication means located at a road side. The relay means is for relaying encryption information received from the road side by the transmitting/ receiving means to an IC card. The IC card includes storage means for storing user information regarding a balance of charges and encryption means that encrypts and outputs output information based on the user information and decodes encrypted input information regarding the user information.

Through the structure of the claimed invention having a relay means for relaying encryption information received from the road side to an IC card which includes an

encryption means, as claimed in claim 1, the claimed invention provides a vehicle-mounted communication device that can improve security. The prior art does not show, teach or suggest the invention as claimed in claim 1.

Claim 8 claims a road-to-vehicle communication device comprising a road-side control means, an information control means and a vehicle-mounted control means. The road-side control means is located at a road side, and includes a road-side communication means provided for intercommunication of information with a vehicle-mounted communication means. The road-side control means also includes a first encryption means for encrypting transmitted information and decoding received information, with a first electronic key. The information control means includes an information transfer means which stores therein user information regarding at least one of a vehicle and a user and through which information is mutually transferred with respect to the vehicle-mounted communication means. The information control means also includes a second encryption means for encrypting output information and decoding input information, with a second electronic key. The vehicle-mounted control means is installed on a vehicle side, and includes the vehicle-mounted communication means provided for intercommunication of information with respect to the road-side communication device and for mutual transfer of information with respect to the information control means. The vehicle-mounted control means also includes a third encryption means which, during the communication of information, encrypts transmitted information and decodes received information with the first electronic key, and which during the transfer of information, encrypts output information and decodes input information with the second electronic key.

Through the structure of the claimed invention having a road-side control means including a first encryption means with a first electronic key, an information control means including a second encryption means with a second electronic key and a vehicle-mounted control means with a third encryption means which uses the first electronic key during communication of information and which uses the second electronic key during transfer of information, as claimed in claim 8, the claimed invention provides a road-to-vehicle communication device in which the disclosure of the secrecy of a system can be kept to a minimum even when the disclosure of one electronic key becomes known. The prior art does not show, teach or suggest the invention as claimed in claim 8.

Claims 1-7 and 10-20 were rejected under 35 U.S.C. §102(e) as being anticipated by *Hoshino et al* (U.S. Patent No. 6,088,680). In addition, claims 8 and 9 were rejected under 35 U.S.C. §102(e) as being anticipated by *Hoshino et al*.

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §102(e). The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, it is respectfully requested that the Examiner withdraws the rejection to the claims and allows the claims to issue.

Hoshino et al appears to disclose a system for automatically adjusting a fee such as a toll for a toll road. (Col. 1, lines 11-12) An automatic toll adjusting system for automatically adjusting a toll and using of a storage medium for storing adjustment information necessary for toll adjustment carried by each user comprises a toll adjusting gate employing a first toll payment system for exchanging information with the storage medium by radio communication at a first predetermined frequency to automatically adjust

a toll in a first toll payment system, and a toll adjusting gate employing a second toll payment system for exchanging information with the storage medium by radio communication at a second predetermined frequency to automatically adjust a toll in the second toll payment system. A storage medium having a radio communication function for an automatic toll adjusting system carried by each user, comprises a storing means for storing adjustment information necessary for toll adjustment therein, a receiving means for receiving information from outside by radio communication at a first predetermined frequency, a processing means for performing a read process to read information stored in the storing means and a write process to write information into the storing means on the basis of the information received by the receiving means, and a transmitting means for transmitting responsive information including the information from the storing means to the outside by radio communication at the first predetermined frequency, at a toll adjusting gate employing a first toll payment system, information being exchanged directly between the receiving means and the transmitting means, and a writing apparatus or a settling apparatus for automatic toll adjustment at the toll adjusting gate by radio communication at the first predetermined frequency. At a toll adjusting gate employing a second toll payment system, the storage medium having the radio communication function is inserted in a frequency converting apparatus converting information and the first predetermined frequency is converted into a second predetermined frequency for toll post-payment. Besides converting information at the second predetermined frequency into the first predetermined frequency, the storage medium having the radio communication function

indirectly exchanges information via the frequency converting apparatus through the receiving means and the transmitting means with the writing apparatus or the settling apparatus for automatic toll adjustment at the toll gate by radio communication at the second predetermined frequency. A frequency converting apparatus is used for an automatic toll adjusting system into which a storage medium is inserted. The storage medium has a radio communication function for storing adjustment information necessary for toll adjustment carried by each user and for exchanging information with the outside by radio communication at a first predetermined frequency. The frequency converting apparatus comprises a first communicating means for exchanging information with the storage medium having the radio communication function by radio communication at the first predetermined frequency when the storage medium having the radio communication function is inserted in the frequency converting apparatus, and a second communicating means for exchanging information with the outside by radio communication at a second predetermined frequency. When the storage medium having the radio communication function is inserted in the frequency converting apparatus, the first communicating means transmits information received from the outside through the second communicating means to the storage medium by radio communication at the first predetermined frequency. In addition, the second communicating means transmits information received from the storage medium through the first communicating means to the outside by radio communication at the second predetermined frequency. At a toll adjusting gate, when the storage medium is inserted in the frequency converting apparatus, information is exchanged between a writing apparatus or a settling apparatus for automatic toll adjustment at the toll adjusting gate and

the storage medium having the radio communication function via the first communicating means and the second communicating means. (Col. 3, line 19 through Col. 4, line 29)

Thus, *Hoshino et al* merely discloses an automatic toll adjusting system using a storage medium which communicates by a radio communication at a first predetermined frequency or at a second predetermined frequency. Nothing in *Hoshino et al* shows, teaches or suggests a relay means which relays encryption information to an IC card which includes encryption means which encrypts output information and decodes encrypted input information as claimed in claim 1. Rather, *Hoshino et al* merely discloses a storage medium which communicates by radio communication at first and second predetermined frequencies (i.e., first and second predetermined frequencies are not encryption and decryption).

Additionally, *Hoshino et al* merely discloses a storage medium which communicates with a first toll payment system at a first predetermined frequency and is inserted in a frequency converting apparatus to communicate with a second toll payment system at a second predetermined frequency. Nothing in *Hoshino et al* shows, teaches or suggests a road-side control means including a first encryption means for encrypting and decoding information with a first electronic key, an information control means including a second encryption means for encrypting and decoding information with a second electronic key and a vehicle-mounted control means including a third encryption means which during communication of information (i.e., communication with the road-side control means) encrypts and decodes information with the first electronic key and which during transfer of information (i.e., communication with the information control means) encrypts and decodes

